

Appl. No. 10/708,942
Amdt. dated July 07, 2005
Reply to Office action of May 03, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-20 (cancelled).

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21 (new): A lowpass filter formed in a multi-layered substrate comprising:
a first inductor having one end electrically connected to a first node;
a second inductor having one end electrically connected to a second node;
a third inductor having one end electrically connected to the first node and another
10 end electrically connected to the second node, wherein the third inductor is
formed on different layers of the multi-layered substrate than the first and
second inductors;
a first capacitor formed on at least one layer of the multi-layered substrate and being
electrically connected to the first node and to ground; and
15 a second capacitor formed on at least one layer of the multi-layered substrate and
being electrically connected to the second node and to ground;
wherein negative mutual inductance exists between the first and third inductors and
between the second and third inductors.

20 22 (new): The lowpass filter of claim 21, further comprising:

a first via for electrically connecting the first inductor, the third inductor, and the first
capacitor at the first node; and
a second via for electrically connecting the second inductor, the third inductor, and
the second capacitor at the second node.

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23 (new): The lowpass filter of claim 21, wherein the first capacitor comprises a first
metal sheet electrically connected to the first node and a second metal sheet

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electrically connected to ground, and the second capacitor comprises a third metal sheet electrically connected to the second node and a fourth metal sheet electrically connected to ground.

5 24 (new): The lowpass filter of claim 21, wherein the first, second, and third inductors are formed out of metal strips.

25 (new): The lowpass filter of claim 24, wherein the metal strips are patterned in spiral shapes.

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26 (new): A lowpass filter formed in a multi-layered substrate comprising:
a first layer of the multi-layered substrate comprising a first inductor having one end electrically connected to a first node and a second inductor having one end electrically connected to a second node;

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a second layer of the multi-layered substrate comprising a third inductor having one end electrically connected to the first node and another end electrically connected to the second node;

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a third layer of the multi-layered substrate comprising a first metal sheet electrically connected to ground and a second metal sheet electrically connected to ground;
and

a fourth layer of the multi-layered substrate comprising a third metal sheet electrically connected to the first node and a fourth metal sheet electrically connected to the second node, wherein the first and third metal sheets constitute a first capacitor and the second and fourth metal sheets constitute a second capacitor;

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wherein negative mutual inductance exists between the first and third inductors and between the second and third inductors.

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27 (new): The lowpass filter of claim 26, further comprising:

a first via for electrically connecting the first inductor, the third inductor, and the first capacitor at the first node; and

5 a second via for electrically connecting the second inductor, the third inductor, and the second capacitor at the second node.

28 (new): The lowpass filter of claim 26, wherein the first, second, and third inductors are formed out of metal strips.

10 29 (new): The lowpass filter of claim 28, wherein the metal strips are patterned in spiral shapes.